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OBSERVATIONS ON THE PEBBLE-MOUND MOUSE *PSEUDOMYS CHAPMANI* KITCHENER, 1980

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ABSTRACT

Observations are presented which indicate that the recently described native rodent *Pseudomys chapmani*, rather than *P. hermannsburgensis*, constructs the pebble mounds mentioned by Ride (1970). Some aspects of active mounds, and the habitats of the Pebble-mound Mouse, are described. The distribution of *P. chapmani* pebble mounds is outlined. In the Gascoyne and Murchison districts these stone nests may be relicts indicating the former distribution of the species.

OBSERVATIONS

Many observers have noted pebble mounds (Ride 1970) or stone nests (Davies 1970) in the north-west of Western Australia. Ride (1970) attributed these structures to the widespread Sandy Inland Mouse *Pseudomys hermannsburgensis* (Waite, 1896). However, over much of its range in arid Australia this mouse has been collected from short, simple burrows (Kitchener 1980, Philpott & Smyth 1967, A. Baynes, pers. comm. and P. Woolley, pers. comm.) and only in the north-west is it found inhabiting pebble mounds.

During a biological survey in 1979, specimens of an undescribed *Pseudomys* were pit-trapped by the authors 31 km south-east of Mt Meharry in the Pilbara region of Western Australia. During the year 12 individuals were captured on traplines set near active pebble mounds. A new species, *Pseudomys chapmani* Kitchener, 1980, was described using the first four specimens collected in 1979 and earlier specimens collected in the late 1950s by E.H.M. Ealey on stations north-east of the Hamersley Ranges (Kitchener 1980). Significantly, many of the earlier specimens, which were then not regarded as distinct from *P. hermannsburgensis*, were collected

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from pebble mounds. Kitchener (1980) provides photographs of the type locality and of an active mound (Fig. 1).

On 19 May 1980, during a biological survey of the Hamersley Range National Park, a gravid female *P. chapmani* was pit-trapped using a drift fence enclosing a pebble mound, 11 km south-east of Mindi Spring (22°48'S, 118°19'E). The mouse was placed in a photographic chamber and supplied with pebbles from its nest. During the following evening it was observed actively moving pebbles. These were transported short distances in the mouth to form a small heap in the corner of the chamber. The forelimbs were also employed in shuffling stones into position and burrowing into the mound. Subsequently this animal was maintained in captivity where it continued to demonstrate mound-building behaviour and on 24 May 1980 produced a litter of four young.

These observations suggest that *P. chapmani* builds pebble mounds and *P. hermannsburgensis* merely uses these nests in the Pilbara on an opportunistic basis. Thus the common name Pebble-mound Mouse should properly be assigned to *P. chapmani* whereas *P. hermannsburgensis* should be referred to only as the Sandy Inland Mouse.

Pebble mounds observed in the Pilbara district ranged in area from 0.5-9.0 m^2 with heaps of stones up to 25 cm above the ground surface. Large mounds had undulating surfaces and pop-holes connected by U-shaped tunnels. Frequently the mounds were added to deep crevices in the rocky substrate. Pebbles from an active mound were weighed to ± 0.1 g on a beam balance and their maximal length was measured to ± 0.1 mm using vernier calipers. The mean weight of 73 pebbles was 4.7 g (S.E. ± 0.7; range 1.3-13.7 g) which is about 30% of the adult body weight of *P. chapmani.* Pebble lengths ranged from 14.9-40.2 mm and their distribution was trimodal with peaks at 20, 26 and 30 mm. This distribution may indicate building activity by different age classes at a traditional mound.

The Pebble-mound Mouse is evidently an inhabitant of rocky, hummock grassland areas with little or no soil in which to burrow but with plentiful supply of pebbles. In the eastern Pilbara, nests of pebbles derived from the iron formation ridges and dolomite and calcrete outcrops were recorded. Mounds were most common on the spurs and lower slopes of ridges where weathering produces abundant pebbles of the preferred size. This habitat was usually vegetated with an open to mid-dense *Triodia basedowii* hummock grassland and scattered emergent *Cassia*, *Acacia* and *Ptilotus* spp. Stone nests were also observed at lower densities on the ridges and outcrops where there was hummock grassland of *T. wiseana* with many emergent *Eucalyptus* and *Acacia* spp.

Fig. 2 shows the localities where *P. chapmani* has been collected and the known distribution of pebble mounds. From the available data it would

appear that the range of *P. chapmani* extended from the Pilbara through the Gascoyne to the Murchison district with a southern limit near Mileura (26°22'S, 117°20'E). The Pebble-mound Mouse has evidently never occurred on the coast (e.g. Cape Range) or on Barrow Island. Its other limits appear to have been the edge of the Great Sandy Desert to the north and the Gibson Desert to the east. From the efforts of workers in the Gascoyne and Murchison districts it now seems probable that the species is extinct in these areas (S.J.J.F. Davies, pers. comm.) and the remaining populations may be confined to the eastern Pilbara. The reasons for this decline are not known.

Fig. 1: An adult female Pebble-mound Mouse *Pseudomys chapmani* from the Hamersley Range National Park (photo: A.G. Wells).

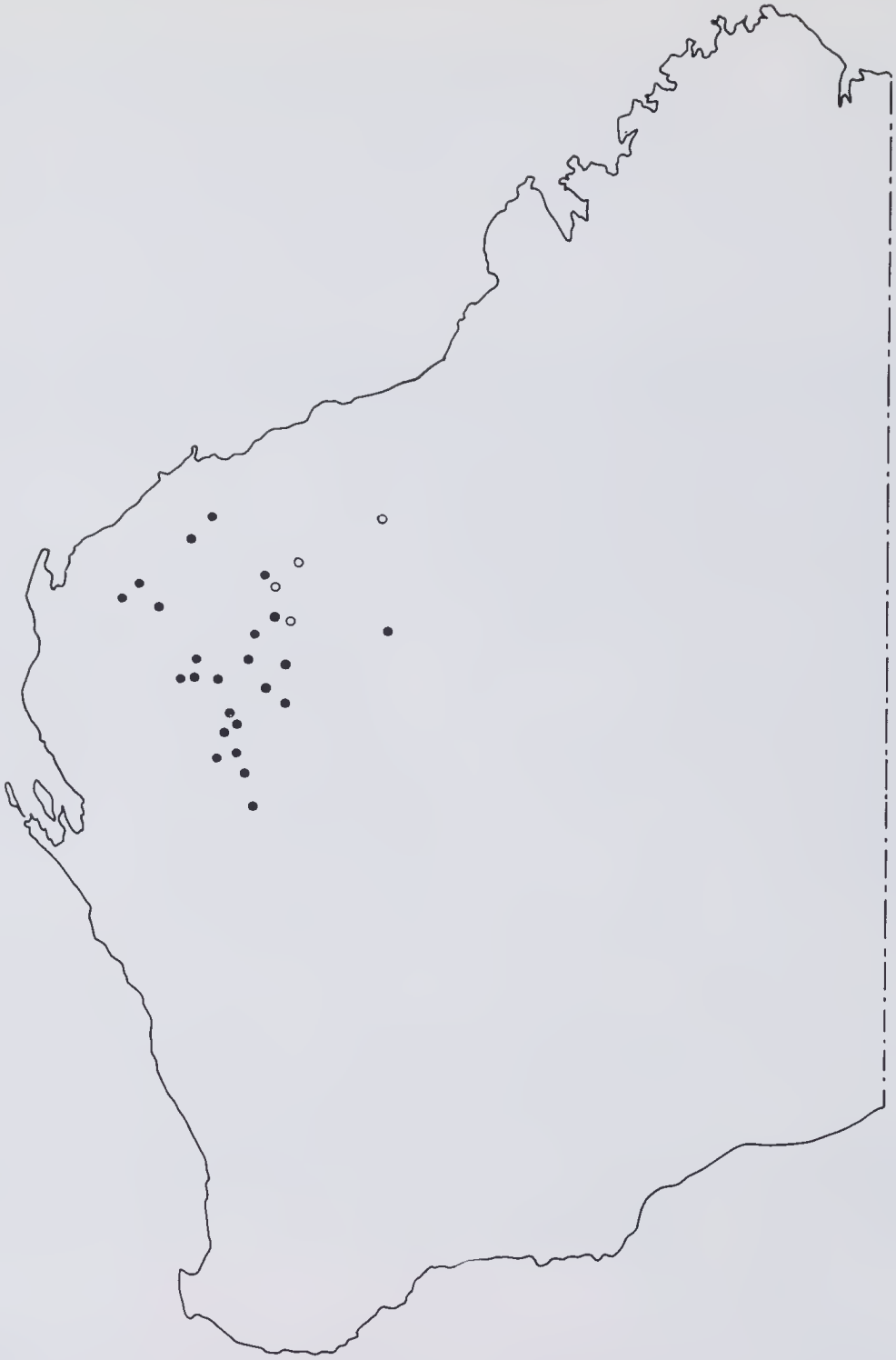

Fig. 2: The distribution of pebble mounds in Western Australia. Open circles (○) indicate locations where *Pseudomys chapmani* has been collected. Closed circles (●) indicate records of the pebble mounds alone, compiled from the observations of S.J.J.F. Davies, T.A. Knight, P. de Rebeira, I.J. Rooke and the authors.

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REFERENCES

DAVIES, S.J.J.F. (1970)—A list of plants and animals found at Mileura, Western Australia. Lat. 26°22'S, Long. 117°20'E. *CSIRO Div. Wild. Res. Technical Memorandum* No. 3: 23-24.

KITCHENER, D.J. (1980)—A new species of *Pseudomys* (Rodentia: Muridae), from Western Australia. *Rec. West. Aust. Mus.* 8: 405-414.

PHILPOTT, C.M. & SMYTH, D.R. (1967)—A contribution to our knowledge of some mammals from inland Australia. *Trans. R. Soc. S. Aust.* 91: 125-126.

RIDE, W.D.L. (1970)—*A guide to the native mammals of Australia.* Melbourne: Oxford University Press.

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